

What is claimed is:

1. An antenna system for indoor wireless communications, comprising:
  - a first access point (AP) antenna having a radio wave emitting surface, a part of the first AP antenna being installed behind a first wall surface of a wall in a building construction;
  - an AP (RF unit) electrically connected to the first AP antenna; and
  - a second AP antenna having a radio wave emitting surface, a part of the second AP antenna being installed behind a second wall surface of the wall, electrically connected to the AP (RF unit).
2. The antenna system as claimed in claim 1, wherein all of the surfaces of the first and second AP antennae, except their respective emitting surfaces, are installed behind their respective wall surfaces, the radio wave emitting surfaces of the first and second AP antennae being exposed and in parallel with their respective wall surfaces to maximize a radiation efficiency of radio waves emitted therefrom.
3. The antenna system as claimed in claim 1, further comprising a third AP antenna having a radio wave emitting surface, wherein the part of

the first AP antenna is installed behind the first wall surface of the wall adjacent a protruding corner of the wall, a part of the third AP antenna is installed behind a third wall surface of the wall adjacent the protruding corner of the wall, the first wall surface and the third wall surface forming an angle at the protruding corner of the wall, to enable wireless communications in an area of the building construction which is not on a line of sight with the second AP antenna.

4. The antenna system as claimed in claim 3, wherein all of the surfaces of the third AP antenna, except its radio wave emitting surface, are installed behind the third wall surface of the wall, the radio wave emitting surface of the third AP antenna being exposed and in parallel with the third wall surface of the wall.

5. The antenna system as claimed in claim 3, wherein the second AP antenna is removed.

6. The antenna system as claimed in claim 1, wherein the first AP antenna and the AP are installed behind the first wall surface of the first wall.

7. The antenna system as claimed in claim 1, wherein the AP and the first and second AP antennae are combined and installed behind the first wall surface and the second wall surface, respectively, in the wall.

8. The antenna system as claimed in claim 3, wherein the first, second and third AP antennae and the AP are combined and installed behind the first wall surface, second wall surface and third wall surface, respectively, in the wall.

9. The antenna system as claimed in claim 1, wherein a power divider is installed in the wall between the first and second AP antenna and the AP, the power divider providing a signal received from the AP to the first and second AP antennae, respectively.

10. The antenna system as claimed in claim 3, wherein a power divider is installed in the wall between the first through third AP antenna and the AP, the power divider providing a signal received from the AP to the first through third AP antennae, respectively.

11. The antenna system as claimed in claim 5, wherein a power divider is installed in the wall between the first and third AP antenna and the

AP, the power divider providing a signal received from the AP to the first and third AP antennae, respectively.

12. The antenna system as claimed in claim 5, wherein the first AP antenna and the AP are combined and installed in the wall.

13. The antenna system as claimed in claim 1, wherein the part of the first AP antenna is installed behind the first wall surface of the wall adjacent a protruding corner of the wall, the part of the second AP antenna is installed behind the second wall surface of the wall adjacent the protruding corner of the wall, the first wall surface and the second wall surface forming an angle at the protruding corner of the wall.

14. An antenna system for indoor wireless communications, comprising:

a first antenna structure that is installed to pass through a selected wall having a thickness in a building construction, the first antenna structure having a sliding structure that may be adjusted according to the thickness of the wall; and

an AP (RF unit) connected to the first antenna structure.

15. The antenna system as claimed in claim 13, wherein the first antenna structure comprises:

first and second horn antennae which are exposed at both sides of the wall and parallel with the wall;

a feed that transmits a signal received from the AP to the first and second horn antennae; and

a sliding waveguide wall that connects the first and second horn antennae and the feed in a sliding structure to match the thickness of the wall.

16. The antenna system as claimed in claim 14, wherein the AP is connected to the feed through the wall.

17. The antenna system as claimed in claim 13, wherein the selected wall comprises a first wall surface and a second wall surface, the first wall surface having the first antenna structure installed therein and the second wall surface being perpendicular to the first wall surface.

18. The antenna system as claimed in claim 16, wherein a second antenna structure is installed in the second wall surface, the second antenna structure having the same structure as the first antenna structure.